

What is claimed is:

- 00922T-2994600
1. An information processing device comprising a plurality of communication units each having a wireless transceiver, and a monitoring and controlling unit
5 for monitoring and controlling said communication units, wherein said monitoring and controlling unit, when at least one of said plurality of communication units maintains a connection, iteratively monitors a communication state of at least another one of said plurality of communication units, and adjusts a communication condition of the wireless transceiver of said
10 one communication unit in accordance with the communication state of the monitored other communication unit.
 2. The information processing device according to Claim 1 wherein, when there is a connection request for connection to said other communication unit or
15 when said other communication unit maintains a connection, said monitoring and controlling unit changes the transmission power level of said wireless transceiver of said one, connected communication unit to a lower level so that a RF signal transmitted from the wireless transceiver of said one communication unit may not substantially interfere with the reception of a RF signal by the
20 wireless transceiver of said other communication unit.
 3. The information processing device according to Claim 1 wherein, when a signal quality of a RF signal received by the transceiver of said other communication unit is below an allowable level, said monitoring and controlling
25 unit changes the transmission power level of said wireless transceiver of said one, connected communication unit to a lower level so that a RF signal transmitted from the wireless transceiver of said one communication unit may not substantially interfere with reception of a RF signal by the wireless transceiver of said other communication unit.

4. The information processing device according to Claim 1 wherein said monitoring and controlling unit iteratively monitors a current state of said other communication unit relating to a connection thereof or a state of said other communication unit relating to a connection thereof expected to occur within a short time period.
5. The information processing device according to Claim 1 wherein said monitoring and controlling unit iteratively monitors a signal quality of a RF signal received at the transceiver of said other communication unit.
6. The information processing device according to Claim 1 wherein said monitoring and controlling unit, when adjusting the transmission condition of the wireless transceiver of said one, connected communication unit, causes another information processing device with which said information processing device is communicating through said one communication unit, to adjust a transmission condition of a wireless transceiver of a communication unit of said another information processing device, too.
7. The information processing device according to Claim 1 wherein said monitoring and controlling unit further monitors reception power of a signal received by the transceiver of said one, connected communication unit, and the transmission condition of the transceiver of said one, connected communication unit is controlled also in accordance with the monitored reception power and with an application activated for data transfer via said one communication unit or device data of another information processing device with which said information processing device is communicating.
8. The information processing device according to Claim 1 wherein said monitoring and controlling unit further monitors signal quality of a signal received by the transceiver of said one, connected communication unit, and the

transmission condition of the wireless transceiver of said one, connected communication unit is controlled further in accordance with the monitored signal quality at said one communication unit.

5 9. The information processing device according to Claim 1 wherein the transmission condition of the wireless transceiver of said one, connected communication unit is controlled also in accordance with a state of a RF signal received at a communication unit of another information processing device with which said one, connected communication unit is communicating.

10

10. The information processing device according to Claim 1 wherein said plurality of communication units are formed in built-in or detachable modules.

15

11. The information processing device according to Claim 1 wherein said plurality of communication units conform with the Bluetooth standard, the wireless LAN standard and/or the mobile communication network mobile station standard.

20

12. An information processing device comprising first and second communication units each having a wireless transceiver, and a monitoring and controlling unit for monitoring and controlling said first and second communication units;

25

said monitoring and controlling unit iteratively monitoring communication states of said first and second communication when said first communication unit maintains a connection, said monitoring and controlling unit adjusting a transmission condition of the wireless transceiver of said first communication unit in accordance with the monitored communication states of said first and second communication units, and with an application activated in relation to the connection of said first communication unit or device data of another information processing device with which said information processing device is

30

Sub A17

communicating through said first communication unit.

13. The information processing device according to Claim 12 wherein, when there is a connection request for connection to said second communication unit, or when said second communication unit maintains a connection, said monitoring and controlling unit lowers transmission power of the wireless transceiver of said first communication unit so that a RF signal transmitted by said first communication unit may not substantially interfere with reception of a RF signal by the wireless transceiver of said second communication unit.

14. The information processing device according to Claim 12 wherein, when signal quality of a signal received at the wireless transceiver of said second communication unit is below an allowable level, said monitoring and controlling unit lowers transmission power of the wireless transceiver of said first communication unit so that a RF signal transmitted by said first communication unit may not substantially interfere with reception of a RF signal by the wireless transceiver of said second communication unit.

15. The information processing device according to Claim 12 wherein said device data is sent on a RF signal from a wireless transceiver of a communication unit of said another information processing device to the wireless transceiver of said first communication unit, and is supplied to said monitoring and controlling unit from said first communication unit.

16. The information processing device according to Claim 12 wherein, when said second communication unit maintains a connection, said monitoring and controlling unit iteratively monitors the communication states of said first and second communication units, and adjusts a transmission condition of the wireless transceiver of said second communication unit in accordance with the communication states of said first and second communication units, and with an

application activated in relation to the connection of said second communication unit or device data of another information processing device.

sub A17
5 17. The information processing device according to Claim 12 wherein the communication state of said first communication unit to be monitored is transmission power of the wireless transceiver of said first communication unit and/or a signal state of a RF signal as received at the wireless transceiver of said first communication unit.

09745062.122600
10 18. The information processing device according to Claim 12 wherein the communication state of said first communication unit to be monitored is a signal state of a RF signal transmitted by the wireless transceiver of said first communication unit as received by a wireless transceiver of a communication unit of said another information processing device.

15 19. The information processing device according to Claim 12 wherein said monitoring and controlling unit, when adjusting the transmission condition of the wireless transceiver of said first communication unit, causes said another information processing device to adjust a transmission condition of a wireless
20 transceiver of a communication unit of said another information processing device, too.

25 20. The information processing device according to Claim 12 wherein a RF signal transmitted by the wireless transceiver of said first communication unit tends to more strongly interfere with a RF signal reception of the transceiver of said second communication unit than a RF signal transmitted by the wireless transceiver of said second communication unit does with a RF signal reception of the transceiver of said first communication unit.

30 21. The information processing device according to Claim 12 wherein said

first and second communication units are formed in built-in modules or detachable modules.

22. The information processing device according to Claim 12 wherein said first communication unit conforms with the Bluetooth standard or the wireless LAN standard, and said second communication unit conforms with the mobile communication network mobile unit standard, the wireless LAN standard or the Bluetooth standard.

10 ~~23.~~ An information processing device comprising at least one communication unit having a wireless transceiver, and a monitoring and controlling unit for monitoring and controlling said one communication unit, wherein, when said one communication unit establishes or maintains a connection, said monitoring and controlling unit adjusts a transmission condition of the wireless transceiver of
15 said one communication unit in accordance with an application activated in relation to the connection of said one communication unit or device data of another information processing device with which said first information processing device is communicating through said one communication unit.

20 24. The information processing device according to Claim 23 wherein said monitoring and controlling unit, when adjusting the transmission condition of the wireless transceiver of said one communication unit, causes another information processing device to adjust a transmission condition of a wireless transceiver of a communication unit of said another information processing device, too.

25 ~~25.~~ An information processing device comprising at least one communication unit having a wireless transceiver, and a monitoring and controlling unit for monitoring and controlling said one communication unit, wherein, when said one communication unit maintains a connection, said monitoring and controlling unit
30 iteratively monitors a communication state of said one communication unit, and

adjusts a transmission condition of the wireless transceiver of said one communication unit in accordance with said monitored communication state, and with an application activated in relation to the connection of said one communication unit or device data of another information processing device
5 with which said information processing device is communicating through said one communication unit.

Sub A17
26. The information processing device according to Claim 25 wherein the communication state of said one communication unit to be monitored is
10 transmission power of the wireless transceiver of said one communication unit and/or a signal state of a RF signal as received at said wireless transceiver of said one communication unit.

27. The information processing device according to Claim 25 wherein said
15 monitoring and controlling unit, when adjusting the transmission condition of the wireless transceiver of said one communication unit, causes another information processing device to adjust a transmission condition of a wireless transceiver of a communication unit of said another information processing device, too.

28. The information processing device according to Claim 25 wherein the
20 communication state of said one communication unit to be monitored is a signal state of a RF signal transmitted from the wireless transceiver of said one communication unit as received at a wireless transceiver of a communication unit of said another information processing device.

29. The information processing device according to Claim 25 wherein said
25 device data is transmitted on a RF signal from a wireless transceiver of a communication unit of said another information processing device to the wireless transceiver of said one communication unit, and is supplied to said
30 monitoring and controlling unit from said one communication unit.

30. The information processing device according to Claim 25 wherein said communication unit conforms with the Bluetooth standard or the wireless LAN standard.

5 31. The information processing device according to Claim 25 wherein said communication units are formed in built-in modules or detachable modules.

32. The information processing device according to Claim 25 wherein said transmission condition is transmission power, a transmitter amplifier gain, an amount of attenuation provided by an attenuator, an antenna gain or an antenna direction.

33. A program stored in a recording medium for monitoring and controlling communications of an information processing device, said information processing device including a plurality of communication units each having a wireless transceiver, and a processor, said program causing said processor to perform the steps of:

when at least one of said plurality of communication units maintains a connection, iteratively monitoring a communication state of at least another of said plurality of communication units; and

adjusting a transmission condition of the wireless transceiver of said one communication unit in accordance with the monitored communication state of said another communication unit.

34. The program according to Claim 33 wherein said adjusting step includes a step of lowering transmission power of the wireless transceiver of said one, connected communication unit when there is a connection request for connection to said another communication unit or when said another communication unit maintains a connection, whereby a RF signal transmitted from the wireless transceiver of said one communication unit is substantially

prevented from interfering with reception of a RF signal by the wireless transceiver of said another communication unit.

5 35. The program according to Claim 33 wherein said adjusting step includes a step of lowering transmission power of the wireless transceiver of said one, connected communication unit, when a signal quality of a RF signal received by the transceiver of said another communication unit is below an allowable level, whereby a RF signal transmitted from the wireless transceiver of said one communication unit is substantially prevented from interfering with reception of
10 a RF signal by the wireless transceiver of said another communication unit.

36. The program according to Claim 33 wherein said monitoring step includes a step of iteratively monitoring a current state of said another communication unit relating to a connection thereof or a state of said another communication
15 unit relating to a connection thereof predicted to occur within a short time period.

37. The program according to Claim 33 wherein said monitoring step is a step of iteratively monitoring, signal quality of a signal received at the wireless
20 transceiver of said another communication unit.

38. The program according to Claim 33 wherein said program effecting said processor to perform a further step of:

causing another information processing device which is communicating
25 with said information processing device through said one communication unit to adjust a transmission condition of a wireless transceiver of a communication unit of said another information processing device when a transmission condition of the wireless transceiver of said one communication unit is adjusted.

30 39. The program according to Claim 33 wherein, in said adjusting step, the

transmission condition of the transceiver of said one, connected communication unit is adjusted also in accordance with signal quality of a signal received at a transceiver of a communication unit of said another information processing device.

5

40. The program according to Claim 33 wherein, in said monitoring step, reception power of a signal as received by the transceiver of said one, connected communication unit is further monitored, and, in said adjusting step, the transmission condition of the transceiver of said one, connected communication unit is controlled also in accordance with the monitored reception power and an application activated for data transfer via said one communication unit or device data of another information processing device with which said information processing device is communicating.

15 41. The program according to Claim 33 wherein, in said monitoring step, signal quality of a signal received by the transceiver of said one, connected communication unit, and, in said adjusting step, the transmission condition of the wireless transceiver of said one, connected communication unit is controlled also in accordance with the monitored signal quality at said one communication unit.

20

42. A program stored in a recording medium for monitoring and controlling communications of an information processing device, said information processing device comprising first and second communication units each having a wireless transceiver, and a processor, said program causing said processor to perform the steps of;

25

iteratively monitoring communication states of said first and second communication units when said first communication unit maintains a connection; and

30

adjusting a transmission condition of the wireless transceiver of said

first communication unit in accordance with the monitored communication states of said first and second communication units, and with an application activated in relation to the connection of said first communication unit or device data of another information processing device with which said information processing device is communicating through said first communication unit.

43. The program according to Claim 42 wherein said adjusting step including a step of lowering transmission power of the wireless transceiver of said first communication unit, when there is a connection request for connection to said second communication unit, or when said second communication unit maintains a connection, whereby a RF signal transmitted by said first communication unit is substantially prevented from interfering with reception of a RF signal by the wireless transceiver of said second communication unit.

44. The program to Claim 42 wherein, when signal quality of a signal received at the wireless transceiver of said second communication unit is below an allowable level, transmission power of the wireless transceiver of said first communication unit is lowered in said adjusting step to substantially prevent a RF signal transmitted by said first communication unit from interfering with reception of a RF signal by the wireless transceiver of said second communication unit.

45. The program according to Claim 42 wherein said device data is sent on a RF signal from a wireless transceiver of a communication unit of said another information processing device to the wireless transceiver of said first communication unit, and is supplied to said processor from said first communication unit.

46. The program according to Claim 42, said program causing said processor to perform a further step of:

monitoring communication states of said first and second communication units iteratively when said second communication unit maintains a connection; and

adjusting a transmission condition of the wireless transceiver of said second communication unit in accordance with the monitored communication states of said first and second communication units, and an application activated in relation to the connection of said second communication unit or device data of said another information processing device.

47. The program according to Claim 42 wherein the communication state of said first communication unit to be monitored is transmission power of the wireless transceiver of said first communication unit and/or a signal state of a RF signal as received at the wireless transceiver of said first communication unit.

48. The program according to Claim 42 wherein the communication state of said first communication unit to be monitored is a signal state of a RF signal transmitted by the wireless transceiver of said first communication unit as received by a wireless transceiver of a communication unit of said another information processing device.

49. The program according to Claim 42 wherein said program causes said processor to perform a further step of causing said another information processing device to adjust a transmission condition of a wireless transceiver of a communication unit of said another information processing device, when the transmission condition of the wireless transceiver of said first communication unit is adjusted.

50. The program according to Claim 42 wherein said first communication unit performs a communication procedure according to the Bluetooth protocol or wireless LAN protocol, and said second communication unit performs a

communication procedure according to a mobile communication network protocol, a wireless LAN protocol or the Bluetooth protocol.

51. A program stored in a recording medium for monitoring and controlling communications of an information processing device, said information processing device including at least one communication unit having a wireless transceiver, and a processor, said program causing said processor to perform the steps of:

when said one communication unit establishes or maintains a connection, adjusting a transmission condition of the wireless transceiver of said one communication unit in accordance with an application activated in relation to the connection of said one communication unit, or device data of another information processing device with which said first information processing device is communicating through said one communication unit.

52. The program according to Claim 51 wherein said program causes said processor to perform a further step of causing said another information processing device to adjust a transmission state of a transceiver of a communication unit of said another information processing device when the transmission condition of the transceiver of said one communication unit is adjusted.

53. A program stored in a recording medium for monitoring and controlling communications of an information processing device, said information processing device comprising at least one communication unit having a wireless transceiver, and a processor, said program causing said processor to perform the steps of:

iteratively monitoring a communication state of said one communication unit when said one communication unit maintains a connection; and
adjusting a transmission condition of the wireless transceiver of said

one communication unit in accordance with said monitored communication state and with an application activated in relation to the connection of said one communication unit or device data of another information processing device with which said first information processing device is communicating.

⁵
Sub A17
54. The program according to Claim 53 wherein the communication state of said one communication unit to be monitored is transmission power of the wireless transceiver of said one communication unit and/or a signal state of a RF signal as received at the wireless transceiver of said one communication
10 unit.

009746062 123600
55. The program according to Claim 53 wherein said program causes said processor to perform a further step of causing said another information processing device to adjust a transmission state of a transceiver of a
15 communication unit of said another information processing device when the transmission condition of the transceiver of said one communication unit is adjusted.

56. The program according to Claim 53 wherein the communication state of
20 said one communication unit to be monitored is a signal state of a RF signal transmitted from the wireless transceiver of said one communication unit as received at said another information processing device.

57. The program according to Claim 53 wherein said device data is
25 transmitted on a RF signal from a wireless transceiver of a communication unit of said another information processing device to the wireless transceiver of said one communication unit and is supplied to said processor from said one communication unit.

Sub A17
Cont.
30 58. The program according to Claim 53 wherein said one communication unit

Al
Concl.

performs a communication procedure according to the Bluetooth protocol ro a wireless LAN protocol.

59. The program according to Claim 53 wherein said transmission condition
5 to be adjusted is transmission power, a transmitter amplifier gain, an amount of
attenuation provided by an attenuator, an antenna gain or an antenna direction.

09746062.1.22600